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AUTHOR	Parker, Brenda; Hankins, Judith
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ABSTRACT

The first online course at Middle Tennessee State University (MTSU) was offered in the fall semester of 1997. However, until spring 2001, the Computer Science Department had never offered a course that was completely online, though many courses have had substantial online components. In fall 2000, the authors decided that an on-line Computer Literacy course should be offered. The development and delivery of the course was a learning experience and provided several insights into what should and should not be done in an online course. Preparation time for the class was intensive as was soon discovered. A thorough review of the literature was the starting point for course development and delivery. Many decisions had to be made during the course development phase and a list of those major decisions was developed. When the course actually started, there was a new set of learning experiences involved. Learning experiences included the discovery that an online course is not suited for everyone and that an online course is time-intensive for the instructor even after course materials are developed. This paper discusses strategies used in the development of the class and the problems that were encountered as the class was offered for the first time. It also provides a list of items that were found to be beneficial to the learning process for the student and for the teacher. (Contains 14 references and 3 figures.) (Author)

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The Joys and Sorrows of Teaching Computer Literacy Online

Brenda Parker (csbrenda@mtsu.edu)
Co-author: Judith Hankins

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Keywords: Computer Literacy, Online, Teaching, Course delivery

I. Abstract

The first online course at Middle Tennessee State University (MTSU) was offered in the fall semester of 1997. However, until Spring 2001, the Computer Science Department had never offered a course that was completely online, though many courses have had substantial online components. In Fall 2000, the authors decided that an on-line Computer Literacy course should be offered. The development and delivery of the course was a learning experience and provided several insights into what should and should not be done in an online course.

Preparation time for the class was intensive as was soon discovered. A thorough review of the literature was the starting point for course development and delivery. Many decisions had to be made during the course development phase and a list of those major decisions was developed.

When the course actually started, there was a whole new set of learning experiences involved. Learning experiences included the discovery that an online course is not suited for everyone and that an online course is time-intensive for the instructor even after course materials are developed.

This paper will discuss strategies used in the development of the class and the problems that were encountered as the class was offered for the first time. It will also

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provide a list of items that were found to be beneficial to the learning process for the student and for the teacher.

II. The What? and Whys? of Computer Literacy Online

Computer Literacy is a one credit-hour class at MTSU that can be used to satisfy one of the general requirements for a baccalaureate degree. This requirement specifies that all students seeking a bachelor's degree must have a basic knowledge of computers, including computer development, applications in today's world, and direct experience in operation. This requirement can be met in a variety of ways, but the computer literacy course is most often the choice for non-computer science majors.

The decision to offer Computer literacy as an online course was made for several reasons: 1) There are large differences among the backgrounds of students enrolled in the course. Some students are extremely bored with the slow pace of the course while others are extremely frustrated at the lightning speed of the course delivery. An online course in which students could work at their own pace, as long as deadlines were met, seemed to be a very good choice. According to Chickering and Ehrman (1996), "Fast, bright students can move quickly through materials they master easily and go on to more difficult tasks; slower students can take more time and get more feedback and direct help from teachers and fellow students." 2) MTSU serves a large number of non-traditional students (single parents, older students who work, part-time students from surrounding counties, etc). An online course would be helpful to allow these non-traditional students to work around their various schedules to complete the course. 3) Portions of the traditional computer literacy class were already online. All laboratory assignments were partially online through the web; therefore, converting the laboratory assignments completely online would be relatively easy.

III. Online Course Preparation

The online course took considerable work to develop the course materials and the authors were very surprised at the amount of time required. It was soon learned that developing an online course is quite different from setting-up other lecture based classes. Many important decisions had to be made during the initial phase of course development. Decisions made during this phase had to be made very carefully because they affected future decisions and goals of the course. A list of course decisions and tasks to be performed was developed and then each item in the list was addressed. The development list included the following key decisions and tasks.

- Research online practices and learn best approaches
- Determine course content
- Determine course delivery method
- Develop learning units over the selected topics
- Develop practice quizzes
- Modify laboratory exercises, if needed
- Determine course specifics (grading criteria)

IV. Previous Work on Best Practices for Online Courses

When the search began for previously published work concerning online computing courses, it was found that very few had been published. This is quickly changing as online course delivery becomes more commonplace. Several sources were found concerning online courses in general. One source written for the traditional classroom was also found to be extremely helpful in keeping the focus on good teaching practices. That source was Chickering and Gamson's (1987) "Seven Principles for Good Practice in Undergraduate Education." Chickering and Gamson's principles are:

- Good teaching practice encourages contact between students and faculty.

- Good teaching practice develops reciprocity and cooperation among students.
- Good teaching practice promotes active learning from students.
- Good teaching practice gives prompt feedback.
- Good teaching practice encourages students to spend sufficient time on learning task.
- Good practice communicates high expectation.
- Good practice for effective teaching respects diverse talents and ways of learning.

This work was revisited in the context of distance learning and online courses (Chickering and Ehrman, 1996; Chizmar and Walber, 1999; Graham, Cagiltay, Lim, Craner, and Duffy, 2001; and Nguyen, Cripps, and Draude, 2001). These sources concentrate on how best to incorporate the seven principles of good teaching practice into online courses.

V. Course Content

Determining the course content was relatively easy because the Tennessee Board of Regents mandates topics. However, the authors did not want the course to be tied to any one particular textbook, so an extensive list of topics and subtopics was developed that should be covered in the course. This particular list was reviewed numerous times before a finalized version was decided upon. The decision was also made to present this list of topics to the students in short stand-alone modules. .

VI. Online Course Delivery

The next decision that had to be made involved the course delivery method. The first two times the online course was offered, CourseInfo 4.0, an on-line course management system licensed by BlackBoard Corporation (BlackBoard) was used. For spring 2002, the course was switched to WebCt since the university no longer supports CourseInfo. Both course delivery systems were found to be excellent choices for course delivery. These course management systems allow an instructor to post materials including handouts, worksheets, presentation files and course information. They also provide easy on-line test generation,

email capabilities, discussion boards, collaboration tools, electronic submission of assignments, various levels of security, and grading management software. Other online course delivery systems include: WebCt, Learning Space, IntraLearn, eCollege and Webcourse in a Box. Comparisons among some of the best-known online delivery tools can be found at http://www.marshall.edu/it/cit/webct/compare/comparison.html. A screen shot of the beginning WebCt screen for the literacy course is displayed below.

VII. Online Course Specifics

The first decision in actually delivering the course was to determine how the students learn the "rules" of the course. It was decided to set up an introductory web page that instructed students to participate in a "treasure hunt". The purpose of the "treasure hunt" was two-fold: this activity provided a fun way to communicate the "rules" of the course and made sure that students learned how to use the course management system before the class actually began. The treasure hunt provided the student's first contact with the teacher and with the course delivery system. Cooper (2000) and Nguyen (2001) noted that an initial meeting

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between faculty and students should be held to address technical issues. The treasure hunt was viewed as this initial "meeting." The treasure hunt exercise included a brief introduction concerning the use of the course delivery system and then listed numerous questions related to the class. The students were required to answer the questions and then electronically submit the answers to these questions. Students were given a deadline for the electronic submission and failure to meet the deadline could result in elimination from the class. Some of our treasure hunt questions follow.

- What is the deadline for taking Test 1? (Students are given deadlines but can take a test any time before the deadline date.)
- Where are the tests to be taken? (MTSU's Continuing Studies department has a test facility where students can schedule a test at their convenience.)
- Who do I contact to schedule a test? (Tests can be scheduled online or by telephone.)
- What happens if I miss a test? (the author's policy is to record a zero for that test since tests can be taken at any time. However, in certain situations, the authors have found it necessary to bend this policy.)

In the development phase of the course, it was realized that the specifics for the course should be very different from the normal lecture based class. Eighteen PowerPoint presentations were developed and online practice quizzes were provided over each presentation. Students could take these quizzes multiple times and the quizzes were automatically graded by the course delivery system to provide immediate feedback. Formosa (2001) indicates that the retention rate is 75% when students are required to practice what they have learned.

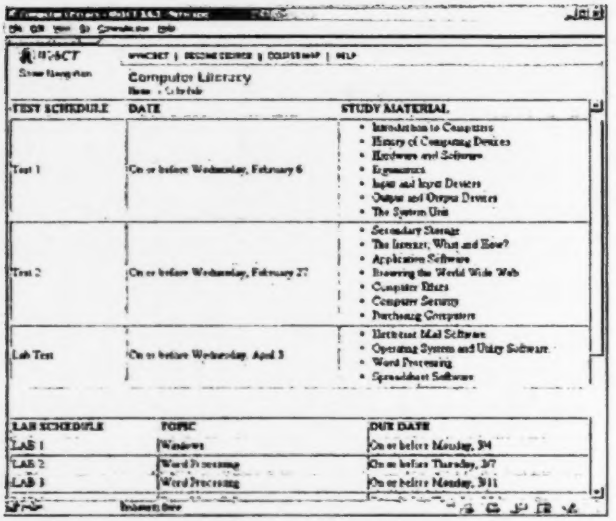
The PowerPoint slides included graphics and sound as well as note pages. Formosa (2001) indicates that various activities can improve the retention rate. For example, the retention rate when listening to a lecture is 5%. The retention rate increases to 20% when audio and video are incorporated into the teaching environment. Inclusion of various

multimedia was done because students learn in different ways. Some are visual learners, some are audio learners, and some are kinesthetic learners.

Adding short videos to the presentation was considered. However the bandwidth and storage capacity required would have been beyond the capacity of many of the literacy students. Also, according to Pullen (2000), "video offers low payoff as a medium for teaching technical subjects, because the important content is in the audio and graphics."

The online course included eight laboratory assignments covering the web, web page creation, word processing, electronic spreadsheets, and presentation software. Laboratory assignments were essential to increase confidence and skills in actually using the computer. Lab assignments helped kinesthetic learners by allowing them to practice what they had been studying. These lab assignments included step-by-step instructions to help the student to solve some task using the computer. The assignments were submitted electronically, were graded electronically, and then electronic mail was used to inform the student of his/her grade and to make comments on the student's lab. Labs were graded within one or two days of submission so students received prompt feedback.

An extensive schedule of events was made available to the student on the first day of class. Shown below is a screen shot of the schedule.



Computer Literacy

TEST SCHEDULE	DATE	STUDY MATERIAL
Test 1	On or before Wednesday, February 6	• Introduction to Computers • History of Computing Devices • Hardware and Software • Ergonomics • Input and Input Devices • Output and Output Devices • The System Unit
Test 2	On or before Wednesday, February 27	• Secondary Storage • The Internet, What and How? • Application Software • Browsing the World Wide Web • Computer Ethics • Computer Security • Purchasing Computers
Lab Test	On or before Wednesday, April 3	• Internet Mail Software • Operating System and Utility Software • Word Processing • Spreadsheet Software

LAB SCHEDULE	TOPIC	DUE DATE
LAB 1	Windows	On or before Monday, 3/4
LAB 2	Word Processing	On or before Thursday, 3/7
LAB 3	Word Processing	On or before Monday, 3/11

The schedule included deadlines for all assignments and tests as well as material to be covered prior to each test. Students were made aware of the schedule during the treasure hunt activity and were asked several questions concerning deadlines and test taking to make sure they were aware of the "rules" of the course.

The course was set up to include three tests: two tests on computer concepts and one test on computer skills. The computer skills test required the student to submit assignments so that application competency in using various software packages could be measured. All tests were administered by MTSU's testing center and students were required to prove their identification before a test could be administered. All grades were recorded in the electronic grade book and the student could look at their grade book at any time to see grades made on labs, quizzes, and tests. A screen shot of the grade book from a teacher's perspective is shown below.

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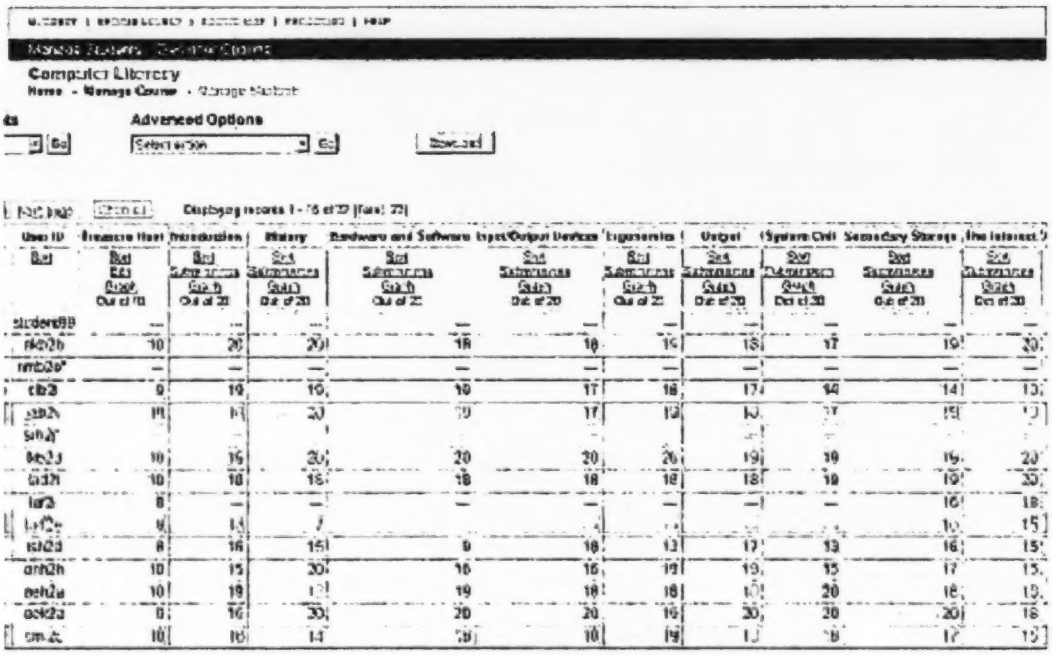

VIII. Joys and Sorrows of Online Computer Literacy

Development of course materials was a learning experience and was very time intensive. However, when the course actually started, there was a whole new set of learning experiences. The authors quickly found that an online course is definitely not for everyone. It was learned the hard way that students who enroll in the course should be highly disciplined and highly motivated to work on their own. As Carrasquel (1999) noted, many students tend to procrastinate and this does generate serious problems. In recognition of these problems, MTSU has developed a skills assessment quiz that a student can take prior to taking an online course to help the student determine whether taking an online course is a good idea for them. The skills assessment quiz can be found on MTSU's web site at http://www.mtsu.edu/~netcourse/onlineskills/take_quiz.htm.

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To ensure the success of the students in the class, a list of criteria were developed that had to be met before enrollment approval would be granted. At MTSU, a student must 1) be admitted to the university and 2) complete a university "Permission to Register" form. This form was emailed to the course instructor. Upon receipt of the form, the instructor sends a reply notifying the student whether or not he/she will be allowed to register for the class. A set of guidelines was developed to indicate whether or not a student would be allowed to register for the online literacy course. Some of those guidelines are:

- Did the student have a good reason for enrolling in this particular course (other than "getting out of class")?
- Did the student have access to the Internet?
- Did the student have access to Microsoft Office (PowerPoint, Word, Excel)?
- Did the student have access to sound files through the Internet?
- Did they understand how to use email?
- They must read over and reply to questions regarding the mechanics of the course.

The authors were mistaken in thinking that an online course would not require much time to be spent with these off-campus students because, in general, computer literacy students in the traditional classroom require very little of an instructor's time outside of the classroom. It was soon learned (as others have noted, Doube (2000) and Dann (1998)) that off-campus students do demand much of the instructor's time, even after all the materials for the course have been developed. Many hours were spent per week answering technical questions and dealing with student excuses and problems. The first time the class was offered this was especially true for two reasons. First, the treasure hunt was not used to force a student to become aware of many of the course specifics. Secondly, the guidelines for enrollment into the course were revisited and students were required to read over and reply to questions regarding course mechanics before enrollment was approved.

Teaching online can be very rewarding. Though the instructor rarely meets the student in person, there can be a closer bond between the instructor and the student than in the traditional classroom. This is due to the many electronic correspondences between the student and instructor. It was found that many students feel more dependent upon the instructor in an online course than for a traditional classroom setting. Thus it is imperative that regular feedback is given and that the course materials are meticulously developed.

A questionnaire was developed to help evaluate the effectiveness of the course and the authors were very pleased with the results. There were no negative responses to the questionnaire and quite often students provided additional information that was not included on the questionnaire. Their responses indicated that many students had a good feeling of accomplishment and they were proud of the knowledge they had gained. More conscientious students made helpful suggestions for course improvement. It was most rewarding to read the student responses.

IX. Our Advice

The authors learned many things related to online teaching through the development and delivery of their first online course. Some of these lessons are listed below in the hopes that it will help others in incorporating distance learning for any course.

- Develop guidelines to determine whether a student should be enrolled in an online course.
- Determine a way to make the student think about whether he/she is disciplined enough and has enough time for an online course.
- Either require an orientation meeting or have some assignment like the treasure hunt that acquaints the student with technical issues, due dates, etc.
- Require weekly email contact with the students to promote motivation and prevent procrastination.
- Develop short (no more than 20 slides) online presentations covering topics that do not overlap. These should be developed to meet diverse learning needs and should at least contain graphics and audio as well as text.

- Develop online quizzes related to the online presentations to review the material presented and to provide prompt feedback.
- If using electronic submission of assignments, print the screen of the digital drop box to have a record of submission dates.
- Require students to do a drop box practice early so that they won't get frustrated and confused when an actual assignment is submitted.
- Organize information in the online delivery system efficiently. Use multiple folders that have good, descriptive titles so that the students can gain access to information easily.
- Answer questions and concerns promptly. Use a discussion board if possible because other students may have the same questions.
- Be prepared to spend many more hours than in a traditional classroom both in preparation time and in contact with students after the class starts.
- Develop an evaluation tool to be used to learn how to improve the course.
- Be prepared for a lot of work but overall an enjoyable experience.

X. Future Improvements

There is always room for making improvement in any course. In future offerings of the online literacy course, the authors would like to add components to the course to require students to develop a sense of community. This could be achieved by requiring participation in a virtual chat session concerning some computing issue and giving a grade based on participation. It could also be achieved by requiring a group project in which the group submits a paper on a recent topic in computing.

The evaluation instrument also needs improvement so that feedback can be obtained from all students who start the course (not just the ones who completed the course successfully). This would help to pinpoint course specifics that students found frustrating or difficult to master on their own. The evaluation instrument used so far has always been optional, so feedback was not received from all of the online students. In the future, the authors would like to make the evaluation a required experience in order to ensure that all of the students have the opportunity to speak their mind concerning the course and not just the most vocal ones.

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